

CHAPTER 1

INTRODUCTION

The Division of Policy Evaluation (DPE) at the Social Security Administration (SSA) is developing a model to evaluate the distributional effects of Social Security policy changes. The model is referred to as Modeling Income in the Near Term, or MINT, because the project sought to develop within a short time frame a model that could assess the effects of reforms through the early retirement years of the early post-war birth cohorts. This technical report describes the results of development work on the MINT model performed under contract to SSA by the Urban Institute (UI) and the Brookings Institution (Brookings). The report discusses the methods used to project future incomes, presents regression results for equations explaining the path of different sources of income, and displays tables that summarize the results of projections. It discusses how income in retirement is projected to change for younger cohorts, relative to birth cohorts retiring in the 1990s, and discusses the sources of projected changes in the distribution of income of retirees.

The base data sets used in the model are 1990-93 panels of the Survey of Income and Program Participation (SIPP), matched to Social Security Earnings Records (SER) and Master Beneficiary Records (MBR). The SERs give earnings histories for the years 1951-1996. The project uses data on the matched files for individuals in the 1931-60 birth cohorts to project their incomes at ages 62 and 67 and post-retirement incomes to the year 2020. As part of the contract, UI and Brookings have supplied the SSA with SAS export files and documentation of all the projections and of the programs that create the projections. This report summarizes the research results that are contained in the data files.

Related work undertaken by the RAND Corporation (RAND) under contract to SSA is described in a separate report¹. This report uses some of the results of the RAND work as inputs in its simulations.

I. GOALS OF MINT PROJECT

The purpose of the MINT project is to estimate the baseline distribution of income of the population of Social Security retirement beneficiaries from the 1931-60 birth cohorts at the age of retirement (either 62 or 67) and in the year 2020. This baseline distribution can then be used by SSA to assess the impacts that proposed policy reforms would have on different income and other groups. Social Security benefits of individuals depend on their lifetime earnings. But to obtain a complete picture of the distribution of income of Social Security beneficiaries, MINT also creates projections of income from other sources, including pension income, income from non-pension

saving, and partial retirement earnings, and then projects the path of income changes after retirement. The projections of earnings, pension income, and non-pension wealth are performed assuming alternative retirement ages of 62 and 67. The estimate of post-retirement earnings includes a projection of which individuals retire at each age between 62 and 67 and then a subsequent projection of partial retirement earnings for those who are retired, where being retired is defined as receiving Social Security retirement benefits.²

As part of its output, this study used the MINT database to produce stylized profiles of earnings for both newly retired and projected cohorts of workers. Analysts have in the past used the career earnings of three “representative” earners reported by SSA -- a high earner, a medium earner, and a low earner -- to provide examples of the effects of the Social Security system on individuals, including the fraction of lifetime earnings that benefits replace and the rate of return people earn on Social Security taxes they (and their employers) pay.³ This report has produced stylized profiles for a wider variety of individuals from weighted averages of actual and projected earnings profiles. The new stylized profiles have two purposes: 1) to illustrate how taking account of the actual age-earnings patterns of representative workers (as opposed to the “level” lifetime wage patterns selected for illustrative purposes by SSA) could affect calculations of the effects of proposed changes in benefit formulas (including partial “privatization” plans that substitute defined contribution accounts for a portion of current retirement benefits) and 2) to enable analysts outside of SSA who lack access to microeconomic data to make rough calculations from appropriately weighted profiles of the budgetary and distributional effects of changes in the benefit formula.

Due to the need to produce a model that the SSA could use to analyze policy proposals by late 1998, the MINT project created a baseline projection without employing a full-scale dynamic micro simulation model. Instead, MINT relied on regression techniques to estimate incomes at retirement from different sources for later cohorts in the SIPP panels, based on the lifetime path of incomes for earlier cohorts in the SIPP panels.⁴ Thus, the projections to some degree rely on an assumption that the future growth of income and assets of younger individuals will replicate the past growth of income and assets of similarly situated individuals in earlier cohorts. The projected 2020 income distributions will differ from the current income distribution of retirees for two main reasons. First, younger cohorts have had different paths of earnings and saving in their early working years than older cohorts, which will be reflected in different lifetime earnings and levels of wealth at retirement. Second, changes in birth rates (known) and mortality and divorce rates (projected based on recent experience) will change the future demographic composition of the population and thereby affect the shape of the income distribution and particular features of the distribution of concern to policymakers, such as the proportion of retirees with incomes below the poverty line.

MINT is not a forecast of the macro economy. The model uses the projections of the Social Security Office of the Chief Actuary to derive future values of the average wage and the price level in the economy. All economic variables in the forecasts are expressed as percentages of the average wage in the economy. Thus, MINT seeks to forecast the *distribution* of outcomes

relative to the average wage instead of the overall path of incomes in the economy. Average lifetime earnings and wealth for particular cohorts can, however, change relative to both the average wage and to average relative earnings and wealth of earlier cohorts.

II. SEQUENCING OF TASKS IN DEVELOPING THE 2020 DATA BASE

The forecasts of particular items of income proceed sequentially. The results of each projection depend on the previous steps. Due to the magnitude of the project and the time frame involved, we did not incorporate reverse feedbacks from the later projections to the earlier ones -- thus, the different income sources are not estimated simultaneously.

The first step in the project was to project earnings for all workers in the 1931-60 birth cohorts to ages 62 and 67. These projections essentially replicate age-earnings profiles in earlier cohorts and project them to the future, using estimates from a fixed-effects model applied to records in Wave 2 of the 1990-93 SIPP panels. The earnings profiles were then matched with a file created by RAND that projects the year of mortality for individuals with full panel weights in the 1990-93 SIPP panels. Earnings were censored at zero after the projected date of mortality. In addition, a separate model was estimated to predict disability onset, based on demographic variables and a variable created by RAND that projects future health status. Earnings of individuals predicted to receive disability benefits are censored at zero in the year of disability onset.

The second step was to impute earnings records of missing spouses, using a hot-decking procedure that selects missing spouses for individuals from the pool of existing spouses based on matching age and demographic characteristics. The SIPP panels identify the spouses of individuals married, newly divorced, or newly widowed in the year of the survey. There were two categories of missing spouses. The first category was divorced ex-spouses from marriages lasting 10 years or more. Some individuals could claim Social Security benefits based on the earnings of their divorced ex-spouses. The second category was future spouses of those who will marry (either a first marriage or re-marriage) in years subsequent to the SIPP panels used in the study. The RAND projections of marital status impute the date of future marriages for individuals on the 1990-93 SIPP panels who will marry before 2020, but do not select spouses for them.

The third step was to project pension benefits from defined benefit (DB) plans and assets in employer defined contribution plans (DC) and self-directed tax-preferred retirement accounts (Individual Retirement Accounts and Keogh plans), all at ages 62 and 67. These projections use the earnings histories as inputs, both for calculating benefits from DB plans and for calculating annual contributions to DC plans.

The fourth step was to project non-pension wealth of all retirees. This projection was based on equations that forecast wealth outside of pension plans (including IRAs and Keoghs) at ages 62 and 67 as a function of earnings, an indicator for the presence of pension income, and demographic variables, using longitudinal data from the Panel Survey on Income Dynamics (PSID). Separate projections were made for housing wealth and financial assets. The projections use the estimated regression coefficients and values from the earlier projections of earnings and whether the individual has pension income, from either a DB or DC (including IRAs and Keoghs) plan.

The fifth step was to project the year people retire. The projection was based on equations that relate the “hazard” of retirement at ages 62 through 66 to demographic variables, pension coverage, and earnings histories for workers and (where applicable) spouses. The sixth step projects partial retirement earnings at ages 62 through 67 for the subset of people who are projected to be retired, based on demographic variables, the level and composition of wealth, and earnings histories of workers.

The final step projects total income at retirement and in subsequent years. Income at retirement is simply the sum of all income sources projected in earlier steps -- Social Security benefits (based on earnings histories of the worker and, where applicable, his or her spouse), income from pension plans (including IRAs and Keogh plans), income from non-pension wealth, and partial retirement earnings. The path of post-retirement incomes is set by benefits formulas for two sources of income -- Social Security benefits and DB plan benefits. For partial retirement earnings, we estimated a decay function for labor force participation after ages 62 and 67. Housing wealth was assumed to remain constant in real terms after-retirement. Financial assets other than DB pension plans (including DC) plans were assumed to decay based on the coefficients of regression equations (estimated using a synthetic panel from the 1984 and 1990-93 SIPP files) that predict the decline (or increase) of financial assets with age for groups of people over age 62 with varying demographic characteristics, wealth at retirement, and career earnings.

III. ORGANIZATION OF CHAPTERS

The report is organized as follows. Chapters 2 through 6 summarize regression results and other methods used to predict income at retirement, explain how regression estimates and other assumptions were used to project future incomes, and summarize the results of projections. Chapter 2 presents the projections of earnings and disability benefit receipt. An Appendix to Chapter 2 discusses the procedure for imputing earnings records of missing spouses. Chapter 3 presents projections of income from DB pension plans and assets in DC pension plans. Chapter 4 presents projections of financial assets outside of pension plans and housing wealth. Chapter 5 presents projections of the year of retirement. Chapter 6 presents projections of partial retirement earnings. An Appendix to Chapter 6 presents the post-retirement decay function for partial retirement earnings.

Chapter 7 combines the results from previous chapters into a projection of total income at retirement and then presents projections of post-retirement incomes to the year 2020. Chapter 8 presents stylized earnings profiles based on actual and projected earnings of individuals in birth cohorts between 1931-35 and 1956-60. An Appendix to Chapter 8 discusses how using these stylized earnings profiles in place of the traditional high/medium/low earners with stable earnings reported by SSA would affect estimates of the winners and losers from replacing the current Social Security benefit formula with a defined contribution (DC) plan.

Chapter 9 summarizes the principal findings of the study.

CHAPTER 1: REFERENCES

Panis, Constantijn and Lee Lillard, *Near-Term Model Development, Part II*, Final Report, RAND, August 15, 1999.

Iams, Howard M. and Steven H. Sandell, "Projecting Social Security Earnings: Past is Prologue," *Social Security Bulletin*, Vol. 60, No. 3, 1997.

Social Security Administration, "Preliminary SIPP/DPE Model Description," Attachment to Statement of Work, Task Order No. 0600-96-27332, March 10, 1998.

Steuerle, C. Eugene and Jon M. Bakija, *Retooling Social Security for the 21st Century - Right and Wrong Approaches to Reform*, Washington DC, Urban Institute Press, 1994.

CHAPTER 1: ENDNOTES

1. See Panis and Lillard (1999).
2. Retirement under our definition may not be the same as popular conceptions of what it means to be retired. Individuals can be retired from their main career job (and receiving an employer provided pension) and still not receive benefits, if their income from a "bridge" job between their main career and full retirement is too high for them to be eligible for Social Security retirement benefits or if they choose to defer receipt of benefits in spite of being eligible for them. Individuals can still be working in their lifetime job and receive Social Security benefits if they have attained the early retirement age and applied for benefits and their earnings are sufficiently low.
3. See, for example, Steuerle and Jon Bakija (1994).

4. The MINT projections are extensions of earlier work by SSA/DPE in projecting earnings and pension benefits; MINT modifies and expands the methods in these earlier projections and adds projections for other sources of income (income from non-pension wealth and partial retirement earnings). See Iams and Sandell (1997) and Social Security Administration (1998).